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## The case for impulse oscillometry in the management of asthma in children and adults

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**Table 1: Population Based IOS Reference Values in Healthy Adults**

Ref	Study Site	Age	# of subjects	IOS Values Mean (SD) except * value calculated from a regression equation using 45 (age), 175 cm (height), and 70 kg (weight)	
				R <sub>5</sub> [kPa/L/s]	X <sub>5</sub> [kPa/L/s]
<b>(50)<sup>§</sup></b>	<b>Australia</b>	<b>45* (25-74)</b>	<b>132</b>	<b>0.20*</b>	<b>-0.11*</b>
(51)	Europe	45* (45-89)	397	0.22*	-0.07*
(30)		45* (18-84)	368	0.23*	-0.09*
(52)		40.5 (27-66)	12	0.29 (0.07)	-0.09 ( 0.03)
(53)		43 (24-73)	12	0.31 (0.13)	-0.11 ( 0.04)
(54)		37 (2)	18	0.38 (0.02)	-0.11 ( 0.01)
(55)		48.3 (3.9)	18	0.32 (0.03)	-0.10 ( 0.01)
(56)	North America	NA	29	0.28 (0.05)	NA
(57)	Asia	18-65	21	0.29 (0.08)	-0.08 ( 0.05)
(58)		47.6 (2.5)	29	0.26 (0.10)	-0.10 ( 0.01)
(59)		69.8 (1.3)	29	0.27 (0.2)	-0.10 ( 0.01)

<sup>§</sup> **Commercially utilized**

NA: Not available

**Table 2 IOS inhaled therapy response studies in Adult Asthma**

<b>Study</b>	<b>Effect Size <math>\Delta</math> R5-R20 (kPa/L/s)</b>	<b>Standard Deviation of R5-R20 (where reported)</b>
<b>Hoshino M; Allergolint 2010</b> ciclesonide 200 microg once daily or fluticasone propionate 100 microg twice daily for 8 weeks. [N=36]; GINA Step 2 @ baseline	0.02	0.06-0.07
<b>Hozawa S et al PulmPharmacolTher 2011</b> twice daily BUD/FM 320/9 µg or FP/SM 250/50 µg, and treatment efficacy was compared after 4 weeks [n=40]	0.04	0.02-0.03
<b>Hozawa S et al PulmPharmacolTher 2014</b> Two inhalations twice-daily BUD/FM 160/4.5 µg plus as-needed BUD/FM (SMART group, n = 15) or one inhalation twice-daily FP/SM 250/50 µg plus as- needed procaterol (FP/SM group, n = 15) for 8 weeks.	0.04	0.02-0.03
<b>Manoharan A et al, JACI 2016.</b> <b>4 weeks of open label crossover study</b> <b>salmeterol 50 mcg DPI bid vs extra fine</b> <b>12mcg HFA-formoterol bid.</b>	% change reported	SD of % change reported
<b>Hozawa S, PilmPharmacolTher 2016</b> 4 Weeks, BUD/FM 160/4.5 +PRN (SMART) or FF/Vilanterol 100/25 + PRN Procaterol in poorly controlled on moderate dose ICS and FENO high asthma. Randomised open label	0.03	0.02-0.03